

## 4. TOURNAMENTS AND CONTESTS

**E**ACH OF THE MANY FORMS of archery shooting has its own peculiar conditions and practices. In most cases they are definitely standardized by tradition and official regulation. Field archery which includes roving, hunting and other types of shooting, is a matter of shooting varying distances, whereas the Rounds are rigidly stipulated as to distance as well as the number of arrows shot. There are also any number of what are known as novelty shoots, under which may be included the increasingly popular Archery Golf, played on regular golf links.

Flight shooting is in a class by itself. It is a feat of distance rather than accurate aim.

Other forms of archery such as flight shooting, clout, wand, butt, have their own special technique which will be mentioned briefly later.

### The Standard Rounds

As already stated, a Round is an event in which a specified number of ends with specified number of arrows is shot through. The number of arrows is always a multiple of six, shot either as ends or as two separate ends (pairs).

NOTE: Any one wishing information as to local or sectional archery clubs or suggestions how to form one should write Mr. Louis C. Smith, Secretary of the A.A.A., 77 Franklin Street, Boston, Mass.

There are many variations of Rounds, but for our purposes the Rounds that form a part of the program of every national tournament and most sectional meets are the ones to be noted. The requirements as to distance and number of arrows for these Rounds follows.

### York Round (Men only)

72 arrows at 100 yards  
48 " " 80 "  
24 " " 60 "

### Columbia Round (Women)

24 arrows at 50 yards  
24 " " 40 "  
24 " " 30 "

### Metropolitan Round (Men)

30 arrows at 100 yards  
30 " " 80 "  
30 " " 60 "  
30 " " 50 "  
30 " " 40 "

### Junior American Round (Boys)

30 arrows at 50 yards  
30 " " 40 "  
30 " " 30 "

### Men's Round Team (Ohio Round)

96 arrows at 60 yards

### American Round (Men, Women, optional)

30 arrows at 60 yards  
30 " " 50 "  
30 " " 40 "

### National Round (Women)

48 arrows at 60 yards  
24 " " 50 "

### Metropolitan Round (Women)

30 arrows at 60 yards  
30 " " 50 "  
30 " " 40 "  
30 " " 30 "

### Junior Columbia (Girls)

24 arrows at 40 yards  
24 " " 30 "  
24 " " 20 "

### Women's Team Round

96 arrows at 50 yards





### Pope-Young Round

Pope-Young is a special type of Round, named after the two great hunters and archers. It was first shot in 1936 at the A.A.A. Tournament, and at that time called the Art Young Round. It has been a regular national event since. It has its own unique system and scoring. Six 24-inch "bosses" or bales of straw, each 24 x 18" are set as marks, 15 yards apart, arranged in an arc. They are designated, A, B, etc. Six shooting stations also arranged in an arc are set up 7½ feet apart. Shortest shot is 7½ yards, longest 104 yards. The Round is made up of 36 arrows. Each contestant shoots six arrows from each station, being allowed only 45 seconds for the six shots of the end. Shooting stops at the close of each end. Arrows are retrieved and scores taken, each hit counting one point. The archers go on and repeat performance from next station. Anything over 10 is considered a good score. T. M. Stamps scored 14 at the 1938 Tournament.

### Rovers

In rovers, a very old archery game, a group of archers select a mark—any mark, nearby or far away. The man whose arrow comes nearest wins the "cast," selects the next mark, and shoots first for the next end. Roving arrows must be particularly strong and are usually larger both in weight and diameter than target arrows. Heads are blunt and are frequently fletched and painted in bright colors to make them easy to retrieve.

### Clout Shooting

In America Clout Shooting takes the regular Round form. The mark is a 48-foot target lined or taped out on the ground, with the gold in centre as in other targets. The same type of bows and arrows are used as for other target shooting, and the scoring is the same, 9 for the gold, 7, 5, 3, and 1, for the other rings respectively.

ROVERS; CLOUT SHOOTING



## Wand Shooting

This form of archery sport is a long range event, the mark being a stave or "wand," set into the ground with six feet projecting above the surface. Ordinary equipment is used. Sometimes a thin strip of paper pasted across the regulation target is used as a substitute for the more picturesque and historic wand. Men shoot at 100 yards, 36 arrows; women shoot the same number of arrows at 60 yards.

## Archery Golf

This game is played either on a regulation fairway or on a course similar to that used in Rounds. The object is to shoot from a tee to a fixed target in the least number of shots. It has become a very popular sport in Scout Camps. On golf courses when in competition against golfers, disks or other small targets are placed beside the holes for the archer.

## Flight Shooting

Generally speaking, flight shooting requires a heavier bow than ordinary target shots, since the drawing force which shoots the arrow into space must make great distance. The distance that an arrow may be made to fly through air naturally depends on the strength of the bow, its cast and length, and other factors, in addition to the archer's skill and strength.

The composite bow of the Orientals and Turks performed remarkable feats in distance flights without sacrificing too much to weight. Even a wooden (self) bow is usually built for flight purposes as short as is consistent with its endurance, in order to eliminate weight and other handicaps. Arrows are naturally as light as possible, bamboo being a favorite material for this reason. As a rule flight arrows are relatively long and small in diameter.

The "loose" is the important point in this type of shooting, though naturally the bow must be properly held. There is practically no "holding", since except for general direction and safety, point of aim does not have to be considered. The

draw and loose are practically continuous. Many expert shooters sway the body slightly and leap forward as they loose, thus shifting body weight and giving arrow impetus if the motion is correctly timed in drawing. The loose should always be clean and sharp. If arrow "slaps" (touches arrow plate in release) the flight will be retarded.

## High Spots on Flight Shooting

Possibly because of the efficiency and lightness of the composite bow, the Turks have always been famous for their feats in flight shooting. Mahmoud Effendi, secretary to the Turkish Ambassador to England in 1795, is said to have sent a shaft slightly over 480 yards and thought it not at all an extraordinary feat, though the Britishers did. "

Ingo Simon, at Le Touquet, France, in 1913, established a modern record. Using a Turkish bow of only 80 lbs. drawing force, he shot better than 462 yards. It took some time to beat that, but it was Americans who did it.

Homer Prouty in 1933 made a 478 yard shot, which remained untopped until 1939, when Curtis Hill, the 1939 champion, achieved 517 yards, beating Mahmoud's famous record.

## Two Types of Flight Shooting

Flight shooting at national tournaments recognizes two types, known as Regulation and Free style. The ones just described are regulation style records, using more or less the same bow and same form as is used for target shooting. In free style flight shooting, any type of bow is accepted. In 1936, Curtis Hill brought his own free style record up to 614 yards, 6 inches. Though not "official" because the shot was not made at a national tournament, Ken Wilhelm, made a free style record in the California State Meet in 1938 which beats them all. With a bow drawing over 200 lbs. he shot 758 yards, 12 inches.



## 5. HOW TO MAKE A MODERN FLAT BOW

By Ben Pearson

**I**F YOU HAVE NEVER SEEN nor paid particular attention to a well-made bow, or if you have never watched an archery contest, then, try to do so before attempting to make your first bow, because you will get ideas and information that will enable you better to follow the instructions given here.

Much has been said and written about the English longbow. It is the type that was used so effectively by the early English in establishing their empire. It was a full six feet or more in length and was nearly as thick as it was wide.

What is now referred to as the flat bow is somewhat shorter in length, much wider, and, of course, thinner. Due to its very excellent cast and lasting qualities, the flat bow, and what is sometimes known as the semi-flat bow, is now almost universally used, and we seldom see a bow of the old English longbow type on the shooting line or in the hands of those who sally forth to hunt game with the bow and arrow.

### Bow Woods

There are many woods suitable for the making of bows. Here we shall mention only four of them. Yew was the principal wood used by the early English, and to this day a better wood for the purpose has not been found. Yew is found on the West Coast, principally in Oregon and Wash-

ington. Osage orange, also known as Bois D'Arc, is equally as good as yew. They each have their particular qualities, but, everything considered, one is about as good as the other, and certainly no woods have ever been found that equal either of these for making fine bows.

Lemonwood, or dagame, a tropical wood, also produces excellent bows. Due to its relatively low cost and also the relative ease with which it can be fashioned into a bow, more bows, perhaps, are made from this wood than from all others put together.

Hickory also makes a very good bow, but bows made from this wood are not as fast in action as those made from the other woods mentioned. However, due to the fact that bows correctly made from this wood are practically unbreakable and further, to the fact that it is low in cost as compared with the other woods mentioned, it is a very desirable and practical wood from which to make your first bow.

All the woods mentioned may be bought through any dealer in archery supplies. In addition, hickory may be secured through any dealer of hardwood lumber. Osage orange and yew are expensive woods and require special care in that the grain has to be carefully followed in making the bow. In the case of yew, a certain amount of the white sap wood must be left on the back of the stave to insure against breakage. So we shall consider only lemonwood and hickory in presenting these instructions.

### Making the Bow

The first thing to consider is how long the bow should be for your particular requirements. Since, in correct shooting, the arrow is drawn to its full length, the length of the arrow will determine to a great extent the length the bow should be to safely bend the amount required. The proper length of the arrow for your requirements will, of course, depend upon your physical measurements. The most efficient length for your bow depends upon the length of the arrow you require. By taking your spread measurement in inches, as shown in Figure 1, and by referring to the table, the proper length arrow can be determined, and by referring to Table 2,



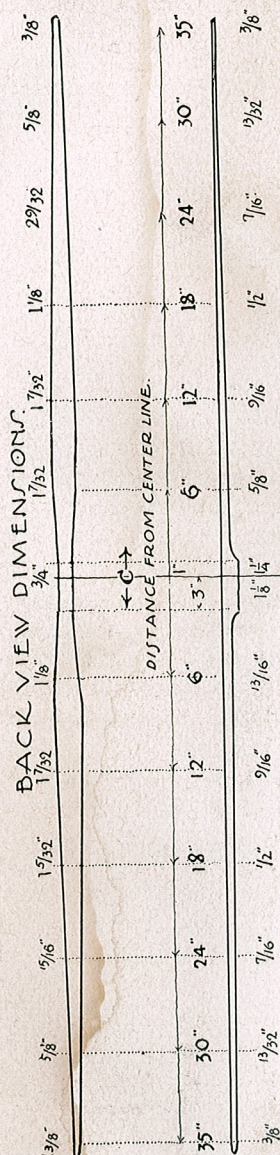


FIG. 1. PLAN FOR 5'8" BOW. - CUT 1" off each end for 5'6". 2" off for 5'4" BOW.



Spread-measurement to determine suitable arrow length:

Spread	Arrow Length
48-50 inches	19-20 inches
51-53 inches	21-22 inches
54-56 inches	22-23 inches
57-59 inches	23-24 inches
60-62 inches	24-25 inches
63-65 inches	25-26 inches
66-68 inches	26-27 inches
69-71 inches	27-28 inches
72-74 inches	29-30 inches



FIG. 3.

# SUGGESTED RATIO, ARROW LENGTH TO BOW LENGTH

Arrow Length	Bow Length
25"	5' 0"
26"	5' 3"
27"	5' 6"
28"	5' 8"

Table 2

the proper length bow can be determined. Having determined the length bow you will require, then secure a piece of lemonwood or hickory 1 1/4 inches wide and approximately 1 1/8 inches thick and of sufficient length to make your bow. Plane one side of this stave perfectly smooth. Draw a line down the center from end to end and lay out the bow outline as shown in Figure 2. Then work to the lines, using a band saw, or, if this is not available, a hand axe, draw knife, and plane. Be sure to follow these contour lines very carefully. Then round the corners of the handle and limbs with rasp or scraper and smooth with sandpaper.

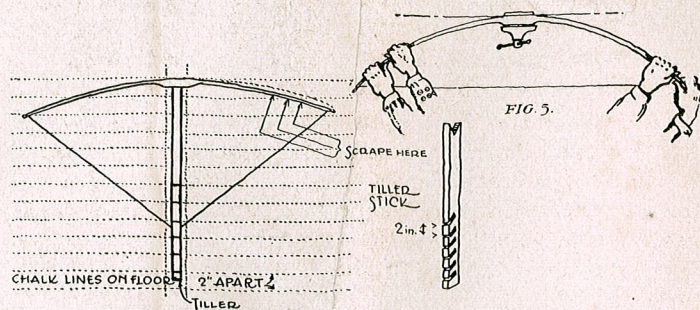
You will note that the handle is laid off as shown in Figure 2 so that three inches are below and one inch is above the center line of the bow. Always remember that the lower half of the bow includes the three-inch portion of the handle and the one-inch portion is above. Thus, the lower limb is a little shorter than the upper limb.

Next, the string nocks should be fashioned in the ends of the bow. Details of how this is done are shown in Figure 3. A small rat-tail file is necessary for forming these nocks. Your bow is now ready to be strung up, or braced, for the first time so that the way it bends may be observed and the stiff places marked for scraping. In order to do this, a string will be necessary. One can be bought at your archery supply house at from 50 to 75 cents.

The bow at this point may be too heavy to be strung easily in the regular manner (instructions for bracing a bow are given elsewhere in this booklet). If this is the case, the following method may be used: Place it in a vice with padded jaws, as shown in Figure 5, and while you bend the upper

## FLAT BOW





Figs. 4 and 5

limb, have an assistant bend the lower limb, and both working together, bend the bow until you can slip the loop into the top nock. Be careful not to let your fingers get under the loop as you let the string take the pressure of the bow, or painful injury may result. The string is apt to stretch some and you may have to adjust the timber hitch a few times before the bow is bent the proper amount. When adjusted correctly the string should stand about five inches from the bow handle.

Now comes the most important work in making your bow which is tillering it, or getting it to bend uniformly in each limb, and the limbs to balance. When it is strung (braced) do not bend it further, but hold it before you and note carefully how it bends. If it does not seem to bend uniformly, mark the places that are stiff with a pencil, remove the string, and with a steel scraper take off the excess wood at the stiff places, being careful not to overdo it. Scraping should be done on the belly side of the bow, but in doing so, maintain the proper cross-section shapes as shown in Figure 2.

Restring the bow and note again. Mark and scrape the stiff places as before. In working out the stiff places, be careful to keep the surface smooth and free from dips. When the bow seems to bend uniformly, have some one draw the string slightly while you note carefully how it

bends. Mark the stiff places again and scrape as before. Repeat this process, drawing a little further each time until a 25- or 26-inch draw is obtained, and the limbs bend uniformly throughout their length and are perfectly balanced.

A tiller stick is a great aid in the work of bringing the bow to the proper bend and can be used to hold the bow in lieu of having some one draw it for you. It is made of a piece of pine or other soft wood  $\frac{3}{4}$ " x 2" x 30". Figure 4 shows how it is made and used. Note the chalk lines drawn on the floor or other flat surface to assist in observing how the bow bends and balances.

When the bow is perfectly balanced, the lower limb being shorter will bend a little less than the upper one. With the bow braced but not drawn, the distance between the string and the belly at a point say twelve inches from the handle should be  $\frac{1}{4}$  inch less on the lower limb than at a corresponding point on the upper limb. After the bow seems to be correctly tillered and the weight you wish, it would be well to shoot it for a few days or a week before finishing it. If one limb shows any weakening or irregularity of curve, scrape a little off the stiff spots until the proper shape is obtained. The finish can now be applied and you may be reasonably sure that your bow will hold its proper shape permanently.

Now glue a soft pine block  $3\frac{1}{2}$  inches long and about  $\frac{1}{4}$  inch thick and one inch wide on the back of the bow at the handle. Shape as shown in Figure 1. This fills out the grip and gives the bow a comfortable feeling in the hand. Now carefully sand the bow and apply a coat of thin shellac. When dry rub down with 2/0 steel wool and give it a coat of clear lacquer. When this is dry, rub very lightly with 2/0 steel wool and apply a coat of furniture wax. Polish with a woolen rag. Cover the handle section with leather or cord and your bow is finished.



## 6. MAKING THE LONG BOW

By Arthur P. Knight

In recent years the long bow has given way to the flat bow described by Ben Pearson in Chapter 5. Most archers find that the flat bow shoots quite as well and is less likely to break. However, we include Arthur P. Knight's excellent article because there are still many archers who favor it.

**S**ECURE A LEMONWOOD STAVE 6 feet long and 1½ inches square, and examine it to see if it is straight. If it is bent out of true\*, steam the stave at the places where it is bent by placing over the cover hole of a teakettle for five or ten minutes, with a cloth covering the stave and the cover hole. Then partially bend the stave straight. Steam another section and bend. Do not try to straighten the stave all at once, do it piecemeal.

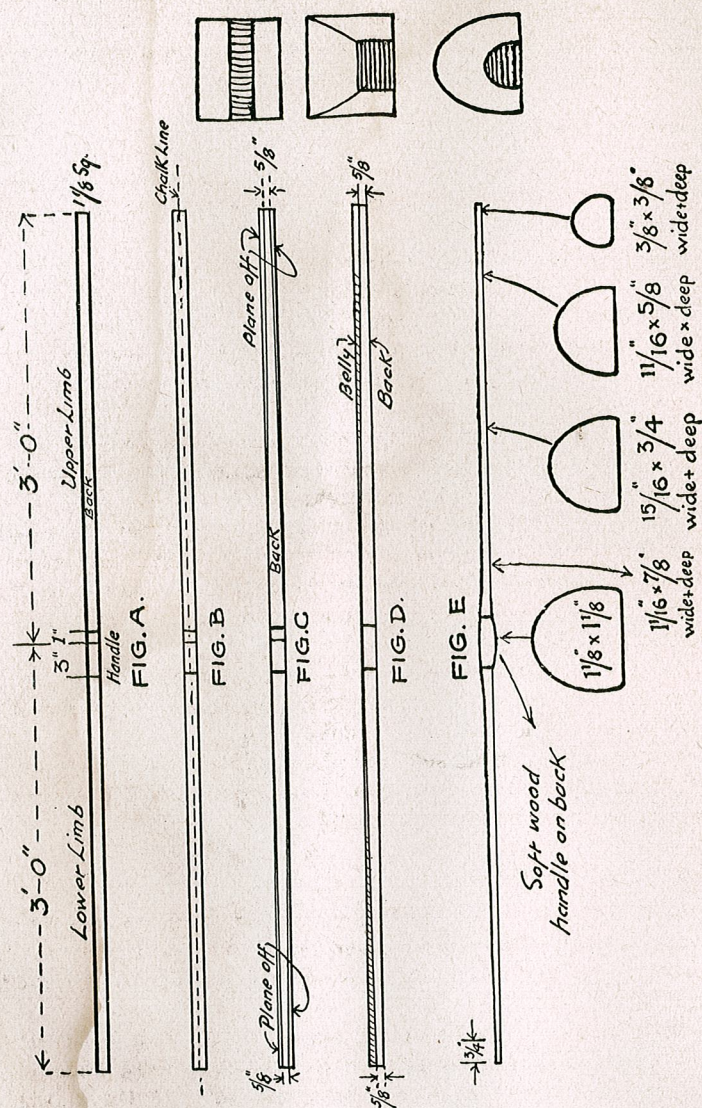
\* Lemonwood staves frequently come to the user bent in two directions; that is, they will be hollowed out a little toward the bark side of the tree and will also bend a little sideways. This usually proves of help to the bowmaker as he will use one of the hollow bends for the back of the bow which will give the bow a slight natural reflex, and he will utilize the side bend to save himself making one of the side cuts, nature having saved him one complete operation. Inexperienced bowmakers on receiving such sticks frequently send them back. This is because they do not understand the advantage of such a bend. If it is found out, however, that the bend in one direction is sometimes so great that the stave will be useless unless corrected, then it may be straightened as described.—F.C.M.



SPOKE SHAVING AND PLANING THE BOW STAVE







When the stave is fairly straight lay it on the bench and plane just through the saw marks on one side so as to have it smooth. We will call this smooth side the "back" of the bow, or that part which is held away from you in shooting, the outside of the curve of the bent bow.

### Making the Handle

Now on the back of the bow mark the handle space as follows: First mark the center of the stave 3 feet from each end (Fig. A).

Then mark off the handle 1 inch one side of the center, and 3 inches the other side, making the handle 4 inches long. You will note that this makes the upper limb of the bow 2 inches longer than the lower. This is done because the bow balances best when laid out in this manner. All good bows are made in this way.

Now make a mark on the center line of the stave so that you divide that line into two equal parts, i.e., the center of the stave both longitudinally and transversely.

Stretch a chalk line of string lengthwise of the stave so that the string crosses the center point just found, and mark points xx at the ends of the stave (Fig. B). Each side of points xx at the ends of the bow is to have a total width in the rough state of 5/8 inches.

Now with a straight edge draw lines from the ends of the lines marking the handle space to the marks which have just been made at the ends of the stave (Fig. C).

Lay the stave on its side and plane away the wood outside of these lines. This forms the side taper of the bow and should be done evenly and neatly.

### Tapering the "Belly"

Now we must taper the "belly" or part held towards you when shooting. Lay your stave on its side with the back towards you and mark the ends of the handle around the other three sides.

Make marks at each end of your stave 5/8 inch from the back of the bow, and using your straight edge, draw lines on the side of the stave from these end marks to the points





Nocks in the bow

where the handle lines meet the belly of the stave. The belly is the side opposite the back (See Fig. D).

Cut away the shaded portion of the wood on the belly side, as shown, to form the taper of the belly. If the work has been done correctly your bow handle will be  $1\frac{1}{8}$  inches square, tapering to  $\frac{5}{8}$  inch square at each end.

Now comes the difficult part of bowmaking, the rounding up of the belly side of the bow. Remember that the back of the bow is left flat and is not touched except for rounding off the corners at the last. Fig. E shows sections of one limb of the bow and how the belly should be rounded. Do this carefully a little at a time, taking care not to plane away too much wood, for you want your bow to be very strong at first so as to allow for wood being taken off in adjusting it down to the proper strength.

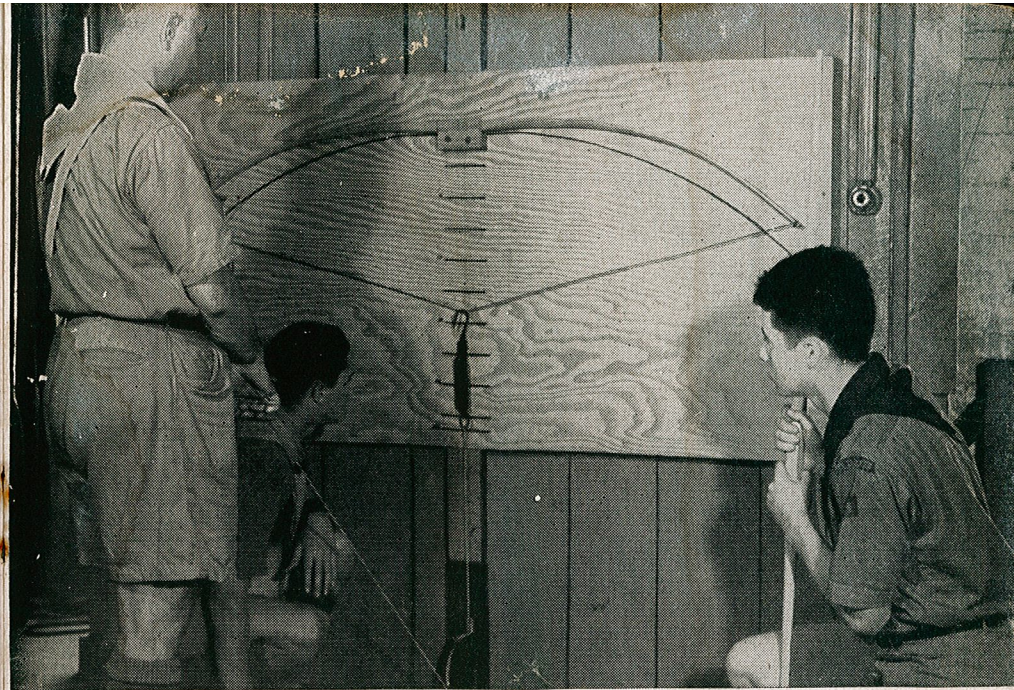
When you have the belly of your bow rounded up, file nocks with a rat-tail file at each end  $\frac{3}{4}$  inch back across the back of the bow and well around the sides to the top of the belly.

Now you are ready to tiller your bow; that is, try it out for evenness of bend. To do this you must have a bowstring. Strings used for testing bows are usually stronger than the string on the finished bow.

### Stringing the Bow

You are now ready to string your bow, which you may find somewhat beyond your strength to do, especially if you

STRINGING THE BOW



ABOVE, TILLER BOARD

BELOW, FILING NOCKS

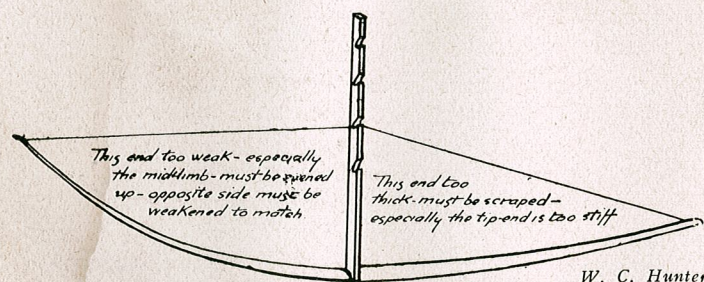




have never strung a bow before. There is a knack to it. It is a good fault to have the bow too strong, since you can take off the wood to weaken it, but you can't put the wood back on to strengthen it, though it is possible to glue a strip on the back and rework the bow, or to shorten it and thus make it stronger, but more apt to break.

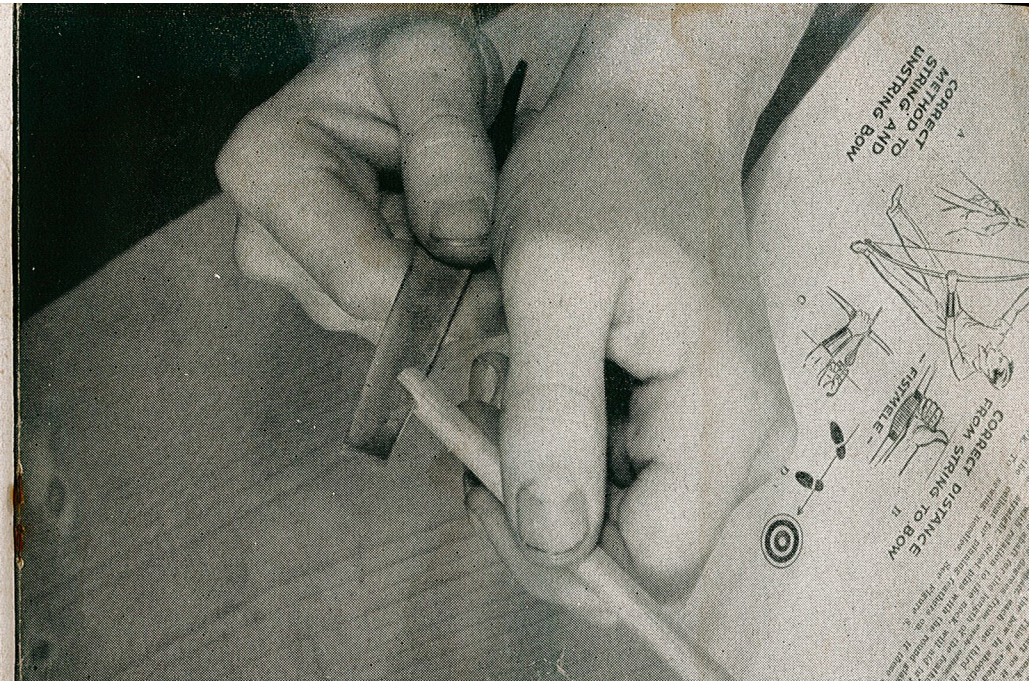
First slip the loop of your string over the upper end of your bow. The upper end is the longer limb and the one always held uppermost in shooting. Now tie a timber hitch in the other end of your string so that when it is placed in the lower nock and tightened up, the loop will be about 3 inches short of the upper nock.

Place the lower end of the bow in the hollow of the right foot, with the back of the bow against the foot, belly towards the left, grasp the bow with the right hand at the handle. The left hand should press against the back of the upper limb with the thumb and first finger on each side of the limb and ready to push the loop into the nock. Don't push on the string, but slide it into the nock as you make it slack by bending the bow. The bending of the bow is accomplished by pushing with the heel of the left hand while holding firm the handle with the right hand. The trick comes with practice and you may need help at first. Get some one to pull down on the extreme end of the bow while you try to string it. Do not use your knee or you will break your bow. When the bow is strung, the string should stand 6 to 6½ inches from the box at the handle.



The Tiller

TILLER



ABOVE, FILING THE ARROW NOCK

BELOW, POINTING THE ARROW

